



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

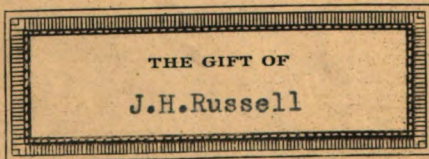
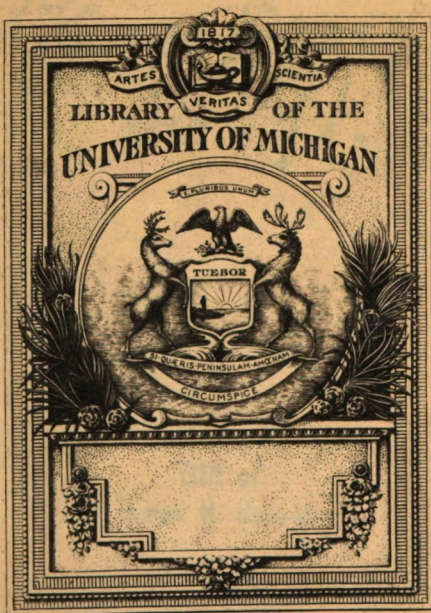
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

A 509130



BS
651
.G349

Gift of
James H. Russell

GEOLOGICAL COSMOGONY;

OR,

AN EXAMINATION

OF THE

**GEOLOGICAL THEORY OF THE ORIGIN AND
ANTIQUITY OF THE EARTH,**

AND OF THE

**CAUSES AND OBJECT OF THE CHANGES IT HAS
UNDERGONE.**

BY A LAYMAN.

NEW-YORK:
ROBERT CARTER, 58 CANAL-STREET.

MDCCLXIII.

Entered according to act of Congress in the year 1843,
By ROBERT CARTER,
In the Clerk's Office of the District Court for the Southern Dis-
trict of New-York.

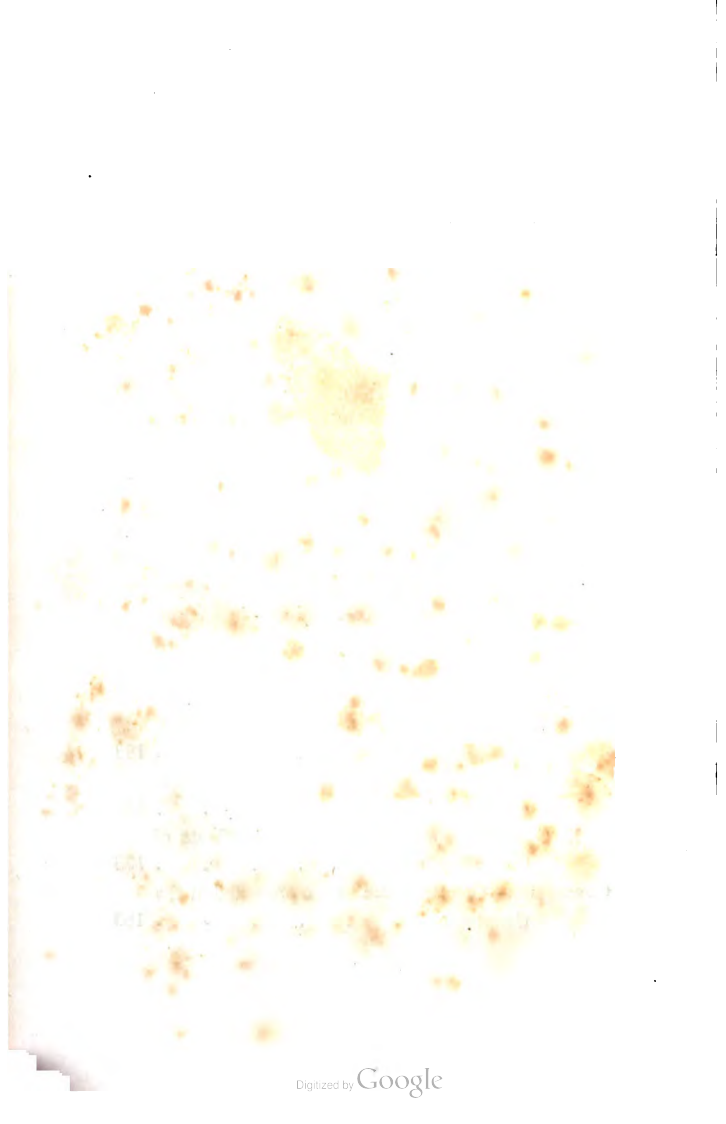
H. LUDWIG, PRINTER
72 Vesey-st., N. Y.

Gift
J. H. Russell
 6-9-33

CONTENTS.

CHAPTER.	PAGE
I. Statement of the subject of inquiry . . .	1
II. Methods of reconciling the Scriptures to the Geological Theory of Antiquity, advanced by different writers, examined . . .	8
III. Object or reason of Geological changes as represented by Geologists, different from that indicated in the Scriptures . . .	28
IV. Quotations from Geological writers of passages in which their theory is expressed . . .	35
V. Objections to their theory founded on its deficiencies in some respects, and the inadequacy of the causes assigned to produce the phenomena ascribed to them . . .	63
VI. The probability of the Geological changes having been occasioned by the apostacy of man, considered . . .	87
VII. Further observations on the same subject . . .	94
VIII. Inadequacy of Geological causes, and exclusion of moral reasons of physical changes, considered . . .	109
IX. Comments on the methods pursued by geological writers . . .	130
X. Opinions respecting the extent and effects of the Deluge, examined . . .	138
CONCLUSION—Creation, &c. as represented in the Scriptures . . .	160

11-8-38 N.C.



GEOLOGICAL COSMOGONY.

CHAPTER I.

THE question, Whether the facts from which the geologists infer that the earth existed millions of ages prior to the Scripture era, are such as to render that conclusion unavoidable? is not so settled as to preclude further examination. Though the philosophers appear pretty generally to have adopted this theory of high antiquity, and though some ecclesiastics have been forward to profess their faith in it, and in its consistency with the Scriptures, there are not wanting those, to whom that construction of facts and appearances from which the inference is derived, is not satisfactory, and who deem it safe for the present to adhere to the cosmogony of the Bible. To such, the importance of the subject in its relation to the sacred volume will, it is presumed, render acceptable an endeavor

our to show that the modern geological theory, and the methods proposed for reconciling the Mosaic record with it, are not well founded; or at least that they are open to as grave objections as the Hebrew text or the commonly received chronology.

The facts discovered by geological research are freely admitted. There can be no rational motive to deny or doubt them; nor is it material to the point at issue, whether all of them are correctly reported or not, whether different geologists agree or disagree with respect to many of them, or whether or not there are innumerable other and similar facts yet undiscovered. The only questions of importance relate to the causes of those facts, their nature and mode of operation, and the inferences to be deduced from them. If the facts were caused in the manner supposed by the geologists, then their inference as to the lapse of ages must be admitted. If, for example, the stratified rocks and the fossil remains contained in them, were deposited by the gradual operation of the causes which are now producing analogous results, slowly ef-

fecting the decomposition of crystalline rocks, and transferring the detritus to the lower levels and depths of the sea; then indeed must we conclude that man's intellect is incompetent to compute or conceive of a number of years sufficient to serve as an element in estimating the periods occupied by this process, prior to the "six days of Moses." Hence the geologists who hold this theory employ such phrases as, millions of millions of years, myriads of ages, inconceivable duration, &c., to show the inadequacy of language to convey any notion of the periods so occupied. Some of them leave to their readers no alternative but to conclude that the earth must be eternal, and that *nature* has progressively fashioned and improved it, and brought different classes of organized beings into existence successively at different places, as the course and condition of things in other respects gave occasion. Others, however, believe and teach that the earth had a beginning, though they regard the facts of fossil geology as showing that there were many successive and distinct creations of plants and animals

long antecedent to the creation of man. These, we are assured, have not existed by succession from eternity. "It is demonstrable from geology," says Doctor Buckland, "that there was a period when no organic beings had existence; these organic beings must therefore have had a beginning subsequently to this period." 'For no fossil remains of organic beings have been found in the crystalline rocks, or elsewhere than in those formed by sedimentary deposits; therefore no such beings could have existed prior to the commencement of the process of stratification. If, as some allege, life may have existed during the formation of the crystalline bed, and the animal and vegetable remains may have been obliterated by the effect of intense heat from below; it is answered, that this would but remove to a point further back the first term of the finite series of organic beings, for the series must stop short of the still melted mass beneath, which is supposed, by the same author, to exist at the depth of a hundred miles.' Such is the argument. To those, however, and there are such, referred

to by Doct. B. who, considering the variety of animals that have existed in widely different climates, ask, 'Who knows, or how can it be shown, that there have not been animals whose proper element and habitation was fire or melted matter?' no answer is vouchsafed. But were the argument deemed sufficient to show that organic beings had a beginning, it would not follow from it, that the pre-existing earth was not eternal.

Were the sedimentary rocks formed by the *gradual* process of those second causes, mechanical and chemical, which are still in operation? This is the chief question. For if those rocks and their fossil contents were deposited by any rapid process; if the Creator, in consequence of the apostacy of man inflicted a curse upon the earth and the brute creation, and upon man himself both in respect to his moral and his temporal life and condition,—a curse by which the state of the earth and its atmosphere was so altered as to render toil necessary to his subsistence; so altered as to diminish the variety and stint the growth of vegetables, give rise to noxious

growths of plants and induce ferocity in animals, shorten the period of human life and require the extinction of many races of inferior creatures: if, having created a perfect world for the abode of man in a state of innocence, a world of boundless and spontaneous fertility, placed under his dominion, yielding without labour all that he could desire, and stocked with innoxious and harmless plants and animals, it became necessary for moral reasons to produce the changes referred to, then may the creation have taken place at the era indicated in the Scriptures.

Now the geologist makes his inference as to the causes and manner of these changes, chiefly from their magnitude, the great extent and depth of the sedimentary formations. The condition indeed in which some fossils are found, particularly some descriptions of shells, is alleged to be such as to imply that they were imbedded by a very gradual process. But nothing conclusive can be inferred from their position, their state of preservation, or other circumstances of their condition. For it is quite conceivable that if they were

rapidly inhumed, the materials employed in that process may have been so finely comminuted, and so diffused in the water, as to subside gently and equably without affecting their most fragile parts; whereas, were the process of deposit extremely slow, it would be reasonable to expect, that owing to the natural decay of such shells while in course of being buried, and to the action of water on the exposed parts, the fossils would not be found in a perfect state.

Nor is any thing conclusive to be inferred from the discovery of animal remains of extinct species; for though now extinct, they may, in the primitive condition of the earth, and prior to any material change in its climates or its fertility, have existed contemporaneously.

It is chiefly the magnitude of the results, which stumbles the geologist. He beholds with amazement a series of deposits, covering areas of great extent, and reaching to the depth of several miles. The aggregate appears to him too vast to be accounted for upon any supposition but that of the gradual

operation of natural causes continued through all but infinite periods of duration. No other causes appear to him to have been necessary even to have assisted in the process. He decides that, with the aid of unlimited drafts upon time, these formations must be their own interpreter.

Having adopted this theory, which appears to him to assign a philosophical cause, and which invests the subject with an enchanting air of antiquity and grandeur, his imagination takes wing. Difficulties, in construing subordinate details, disappear or are easily surmounted. The theory appears to account for the most important facts in a way easily comprehended, without the intervention of miracles, and in harmony with the principles of physical science and the ordinary course of events. It acquires an exciting and fascinating influence ; and comes, at length, to be considered as based upon more certain evidences and grounds of construction and inference, than are furnished by the laws of human language. The stratifications are finally regarded as the leaves of a book, or a series

of volumes, the language and records of which are involved in no ambiguity or uncertainty. He who has learnt that book, deems that he understands its import, beyond all peradventure; nay, such is his confidence that he scarcely deigns to notice any objections founded on events or records which fall within so trifling a period as six thousand years. He has a world, an empire of his own, not of any modern or mushroom growth, not involved in mystery, not entangled with any questions which relate to man either as a moral or physical being; a world, an empire, with which man had no connection, and whose agencies, subjects, and government comprised only animals and matter.

CHAPTER II.

The geological theory of antiquity is considered, by those who maintain it, as liable to objection only from a single quarter, namely, the inspired record. It commands the entire homage of those who disregard that

authority, and is assented to and defended by some professed friends of revelation. The latter class in their attempts to reconcile the Scriptures to this theory show how completely it infatuates them. They consider it the height of presumption to question the truth of the theory, or to doubt of its being firmly established ; while they seem to find no difficulty in adopting the most derogatory and preposterous interpretations of the language of inspiration, by which all pretence of certainty as to its meaning is exploded ; and to help out their hypotheses miraculous interpositions are introduced with familiarity.

There is a class of men, says Doct. John Pye Smith, in his work entitled " Scripture and Geology," " who affirm without hesitation, that there is a real and insuperable discrepancy, between the demonstrated facts of [geological] science, and the unambiguous declarations of the Mosaic writings. The two leaders in this course are Mr. Babbage, and Professor Baden Powell"—both of whom he reports as professed friends of Christianity.— " The former of these philosophers thinks

himself compelled to resort to a desperate kind of hypothesis. 'He is of opinion 'that we cannot so depend upon our ability to construe the ancient Hebrew language, as to be sure that we have correctly interpreted the archaic documents before us.' Thus, to speak the plain truth, an opening is made, for treating the written records of the creation as if they had no existence."

"The second of these distinguished mathematicians and philosophers goes further. He has no difficulty in admitting the perfectly intelligible character of the commencement of Genesis, and the fourth commandment; but he considers it incumbent upon him to maintain, in both cases, that the statement was not intended for an Historial Narrative." 'The representation, he thinks, is made in the language of *figure and poetry*, or of *dramatic action*; the meaning being veiled in the guise of apologue and parable.'

Doctor Buckland in his endeavour (Bridge-water Treatise, chap. 2) to reconcile the first chapter of Genesis with this theory, after announcing it as his opinion that the first

verse refers to the creation of the material elements of the heavens and earth at a time long antecedent to the operations of the first day, and that millions of millions of years may have occupied the indefinite interval, observes : " that the second verse may describe the condition of the earth on the evening (i. e. the commencement) of the first day. This first evening may be considered as the termination of the indefinite time which followed the primeval creation announced in the first verse, and as the commencement of the first of the six succeeding days, in which the earth was to be fitted up and peopled in a manner fit for the reception of mankind." The chaotic state of the earth mentioned in the second verse, " may be geologically considered as designating the wreck and ruins of a former world. At this indeterminate period of time, the preceding undefined geological periods had terminated, a new series of events commenced, and the work of the first morning of this new creation was the calling forth of light from a *temporary darkness* which had overspread the ruins of the ancient

earth.”—“If we suppose all the heavenly bodies and the earth, to have been created at the indefinitely distant time, designated by the word beginning, and that the darkness described on the evening of the first day, was a temporary darkness, produced by an accumulation of dense vapours, ‘upon the face of the deep,’ an incipient dispersion of these vapours *may have* re-admitted light to the earth upon the first day, whilst the exciting cause of light was still obscured ; and the further purification of the atmosphere upon the fourth day, *may have* caused the sun and moon and stars to re-appear in the firmament of heaven, to assume their new relations to the newly modified earth and to the human race.”

Now it is obvious to remark, that all these hypothetical statements, and others not here quoted, are rendered necessary solely by the assumption that the creation announced in the first verse refers to an antecedent period indefinitely remote. That assumption renders it necessary to suppose a miracle by which the work of the preceding interminable period, the whole process of stratification and

deposit of fossils, was rendered null and void, the earth being brought into such a state of chaos and confusion as to require to be remodelled and fitted up for the reception of mankind. It is, however, quite certain that no such miracle occurred ; for the stratifications and fossil deposits, alleged to have taken place during the supposed millions of millions of years, remain, at present, in the same state and the same relative position, in which, even by the argument of the geologists themselves, to prove their antiquity, they were originally deposited. Their argument, if it proves any thing, proves that, since these deposits were made, no chaos, no state of wreck and ruin, or remodelling of the earth has taken place. A chaos and reconstruction would surely have deranged the leaves of the petrified book, and rendered the reading of it an impossibility. Moreover, that part of their argument, which goes to show that the object of those stratifications, which are supposed to have occupied such a waste of years, was to bring the earth into a condition fit for the habitation of man, is at war

with the miracle; for the supposition of an intervening chaos and reconstruction is as inconsistent with the alleged object, as is the present actual condition of the strata.

Without going into any further detail of Doct. Buckland's explanations, suffice it to say, that if his hypothesis be adopted, the first chapter of Genesis should be read substantially as follows :

'In the beginning the heavens and the earth were created, formed, produced or made. The earth was in a state of igneous fluidity. As soon as portions of the surface became cool enough to admit of the existence of certain plants and animals, they were created : and at successive periods, during millions of millions of years, others of different species were produced or had their beginning, of which, as they died off, the remains were gradually covered up by the detritus of rocks slowly disengaged by the action of the elements. This process occupied the first or geological period of the earth. At its close, the whole was thrown into confusion, chaos, wreck and ruin, which put an end to

all the forms of life, and caused a temporary darkness. It was now, in the space of six days, to be reorganised, arranged, and brought into a state fit for the residence of man, and supplied with new tribes of plants and animals. Accordingly, on the first of the six days, by an incipient dispersion of the dense vapours which temporarily hid the sun, a degree of light was called forth. On the second day, the waters under the firmament were separated from those above. On the third day, the waters under the firmament were gathered into seas, and the dry land, called earth, namely the ancient earth which had been temporarily submerged by being thrown into a state of chaos and ruin, reappeared, and brought forth grass and seed bearing herbs and fruit trees. On the fourth day, owing to a further purification of the atmosphere, the sun, moon, and stars became visible in the firmament and assumed their new relations to the newly modified earth and the human race. On the fifth day, the winged tribes and all creatures living in water were made : and on the sixth, all living crea-

tures which occupy the dry land, and last of all man, for whose accommodation the earth was thus reconstructed and furnished, out of the ruins of a former world.'

Doct. J. P. Smith has some peculiar views, though he agrees with others in supposing the date of the earth to be incalculably earlier than that of man's creation. He however believes its origin to have been a creation out of nothing, and that there was a prior eternity. Creation, in the Mosaic record of the "six days," means, in his opinion, "made, adjusted, arranged, appropriated to new purposes,"—and refers only to "the part of our world which God was adapting for the dwelling of man and the animals connected with him."—He is convinced that the narrative of the six days has no wider application than this:—"a description, in expressions adapted to the ideas and capacities of mankind in the earliest ages, of a series of operations, by which the Being of omnipotent wisdom and goodness adjusted and furnished the earth generally, but, *as the particular subject under consideration here*, a PORTION of its surface, for most glo-

rious purposes; in which a newly formed creature should be the object of those manifestations of the authority and grace of the Most High, which shall to eternity show forth His perfections, above all other methods of their display."

He locates this favoured "portion" in Asia, "between the Caucasian ridge, the Caspian sea, and Tartary on the north, the Persian and Indian seas on the south, and the high mountain ridges which run, at considerable distances, on the eastern and western flanks." Having thus selected a site for the six days' operations, he has no great difficulty with what he terms the child-like narrative, drawn up for man in his infant state;—that is about A.M. 2,500.

"This region," he continues, "was first, by atmospheric and geological causes of previous operation under the will of the Almighty, brought into a condition of superficial ruin, or some kind of general disorder. With reverence I propose the supposition, that this state was produced by the subsidence of the region,—probably by a vast movement of the igneous mass below. Extreme darkness

has often been known to accompany such phenomena." "Both this darkness, and the deep waters on which it rested were the effect of the extensive subsidence of the land, a deluge naturally flowing in from a sea or rivers." "The Divine power acted through the laws of gravity and molecular attraction; and where requisite in an immediate, extraordinary, or *miraculous* manner." The atmosphere being so far cleared up as to admit a degree of light, "elevations of land took place by upheaving igneous force; and consequently the waters flowed into the lower parts, producing lakes, and probably the Caspian sea, which manifestly belonged to the very region. The elevated land was now clothed with vegetation, instantly created. By the fourth day, the atmosphere over this district had become pellucid; and had there been a human eye to have beheld, the brightness of the sun would have been seen, and the other heavenly bodies after the sun was set."—After speaking of the production of animals, he observes that, "the heavenly bodies are represented, not as being at that time created, but

made, constituted, or appointed to be luminaries," apparently forgetting that on the theory of their previous creation, they had been luminaries during untold ages.

It requires but small genius to invent an hypothesis like this, or one every way as good, the liberty of calling in the aid of miracles being granted; but the publication can scarcely be accounted for unless we suppose the author to have been completely infatuated by a theory which had been his hobby for many years.

The favoured portion of the earth above referred to, serves the author as the basis of another hypothesis, namely, that of its having been the scene of the Noachic deluge; which, instead of being universal, was, he thinks, confined to this same region. Of necessity he has, however, recourse again to miracles, though, when controverting others, he says with much gravity: "I humbly think, that for the honour of God and the interests of genuine religion, it is our duty to protest against the practice of bringing in miraculous inter-

positions, to help out the exigencies of arbitrary and fanciful theories."

Concerning the deluge he writes as follows: "If in addition to the tremendous rain, we suppose an elevation of the bed of the Persian and Indian seas, or a subsidence of the inhabited land towards the south, we shall have sufficient causes, in the hand of Almighty justice, for submerging the district, covering its hills, &c. The draining off of the waters would be effected, by a return of the bed of the sea to a level, or by the elevation of some tracts of land, which would leave channels and slopes for the larger part of the water to flow back into the Indian ocean, while the lower part remained a great lake, or an inland sea,—the Caspian."

This hypothesis requires that the ark should not have rested on Mount Arrarat; and accordingly he is satisfied that it did not rest there. The top of that mountain is, now at least, in the region of perpetual frost. There was not, he argues, water enough to cover it; and if there had been, Noah and the animals with him could not have descended its

steep and slippery sides, without the aid of a miracle.—The reader is left to conclude that a miracle would have been out of place, on that occasion, though convenient and proper enough to sink the selected “region” or raise the Indian ocean at the required point of time.

It is to the authors of such hypotheses that we are expected to look for the true construction of geological facts. As a specimen of them Doct. Smith is doubtless one of the best. He is borne down by what appears to him to be irresistible evidence of the truth of the geological conclusions which he adopts; is distressed by their contrariety to the inspired records, labours hard to effect a reconciliation, and in the end thinks he has succeeded, and feels convinced, “that the Scriptures, fairly interpreted, are not adverse to a belief in an immeasurably high antiquity of the earth; in the reference of the ‘six days’ work,’ to a part only of the earth’s surface; in the position of several centuries of creation distinct from each other on the surface of the globe; in the reign of death over the inferior animals

prior to the fall of man ; and in a limited extent of the deluge."

Of Mr. Lyell's "Principles of Geology," something requires to be said. The theory which controls or modifies all his observations, inferences and opinions, is, that all the changes which have taken place in the "crust" of the globe, the formation and upheaval of the primary rocks, their decomposition, the deposit of the sedimentary rocks, and their fossil contents, their change of position, local changes of land and sea, earthquakes, deluges, and in short all the phenomena which the earth exhibits, are due to the ordinary operation of those natural causes which are still effecting like results. He excludes all extraordinary interpositions, and supposes that these natural causes never operated with any more energy than they have done during the last 3000 years. He allows of no greater violence or frequency of volcanoes, earthquakes, or other disturbing forces, by which mountain ranges were elevated, or continents made to occupy the places of former seas, in the earlier than in recent periods. Our experience, for the last 3000 years, he deems a sufficient argument

against the probability of any crises, any extraordinary violence of the subterranean action, having occurred previously. 'It is contrary to the analogy of this experience,' he argues, 'to suppose that nature has, at any former epoch, been parsimonious of time and prodigal of violence; to imagine that one district was not at rest while another was convulsed. If it could be shown that a certain combination of circumstances would at some future period produce a crisis in the subterranean action, we should have no right to oppose this experience of 3000 years, to the probability of such occurrences in past ages; but such a combination cannot be foreseen.'—As much as to say, there can be no objection to granting periods long enough to account for all the changes by the gradual operation of ordinary second causes; and granting such indefinite periods, there is no necessity of supposing that there has ever been any reason or occasion, for more violent or rapid progress of change; and unless we can clearly foresee such a reason or occasion

in the future, we have no right to suppose there ever was one.

Such evidences, however, exist, of sudden, extraordinary, and violent action of water, as to require at least a hypothetical dispensation of this element from the rule of uniform action. Accordingly he thinks we can foresee deluges like those of former times ; and observes, that “ in speculating on catastrophes by water, we may certainly anticipate great floods in future ; and *we may therefore presume* that they have happened again and again in past times ;” and we may “ introduce them into geological speculations respecting the past, provided we do not imagine them to have been *more frequent or general* than we , expect them to be in time to come.”

In this way he lays a foundation for reasoning in a circle whenever his theory of antiquity and causation requires it. Taking the position that the order of nature is now uniform, and has continued so for several thousand years, he assumes that it always was so ; and construes all the phenomena he meets with accordingly. If we take it for

granted at the outset that his theory is true, then his constructions and inferences generally must be admitted ; but they are not such of themselves as to prove the truth of the theory. The numerous instances which he has collected, and which evince extraordinary labour and ingenuity, of the results of this uniform course of physical operations in modern times, lose all their importance as grounds of argument in support of this theory, unless the truth of the theory itself be first assumed ; in which case, indeed, it must be allowed to derive a seemingly cumulative support from the numerous facts which he cites, and the relations and analogies which he ingeniously assigns to them. In the progress of his work, he dissents from the now prevalent notion of internal heat, deeming it deficient of evidence, and too much a matter of mere speculation and hypothesis. Yet elsewhere he observes that, "in the rocks of high antiquity, many organic forms have been obliterated by various causes, such as *subterranean heat*, and the percolation of acidulous waters,

which have operated during a long succession of ages."

He does not assume the eternity of the earth or of the present system of changes. That question he leaves as one which geological researches and reasonings cannot determine. "It has been urged," he remarks, "that as we concede the astonishing fact of the first introduction of a moral and intellectual being, so also we may conceive the first creation of the planet itself. I am far from denying the weight of this reasoning from analogy; but although it may strengthen our conviction, that the present system of changes has not gone on from eternity, it cannot warrant us in presuming that we shall be permitted to behold the signs of the earth's origin, or the evidences of the first introduction into it of organic beings."

The introduction of man he regards as an event of no more significance in relation to the objects of his inquiry, than the introduction of any new race of animals. He contemplates man in this relation as a physical being, and alludes to his moral nature only

so far as to account for his greater interference with the irrational tribes under some circumstances than under others. He supposes "the general condition of the globe immediately before and after the period when our species first began to exist, to have been the same, with the exception only of man's presence ;" and limits his interference to his cultivating the earth, subduing and destroying animals and the like.

His views are not embarrassed by references to any thing contained in the sacred volume, except in a brief section on the "supposed effects of the flood." The only rational inference which can be made from his work as a whole, is, that the earth is eternal, and has been subject to an unvarying and ceaseless round of change from existing physical causes.

CHAPTER III.

It would be tedious to notice at any greater length the attempts which have been made to reconcile the Scriptures with the foregone

conclusions of the geologists. Nor is it needful; enough, it is presumed, has been said to show that those attempts fall very far short of what the case requires. What they offer is anything but satisfactory; and in place of adopting any of the hypotheses proposed, it were better and safer to conclude, that if the present geological theory respecting the age of the world, the successive creations of animals, &c., be true, it must be consistent with all that is revealed in the Bible, though it be impossible to make its consistency apparent.

But is that theory true? Are the geologists correct in their inferences and conclusions from the facts of their subject? Are they safe in placing such bold reliance on those inferences, when at variance with plain Scripture statements and implications? Have they not, amid the novelties and physical wonders disclosed by their researches, yielded themselves quite too easily to this captivating theory, and shut their eyes to whatever might threaten to disturb it?

Let it be observed that they all take a widely different view of the object or reason of

the changes in the state of the earth, from that which the Scriptures inculcate. They teach us that it was the object of those changes to improve the condition of the earth, and render it more perfect than it was originally. They suppose the earth to have been at first in an exceedingly imperfect state, a state wholly unsuited to the existence of animal or vegetable life, a state of igneous fluidity ; and that the changes, which occupied myriads of ages, had it for their object to prepare the surface step by step, for the tribes of plants and animals, which at successive periods were created to occupy it.

Some of them suppose, that after this prolonged course of operations, the whole was thrown into a state of chaos and ruin, as if all that had been effected was futile and nugatory as to rendering the surface fit to be occupied by organic beings ; and that out of the ruins it was reconstructed for the residence of man, but subject, nevertheless, after the reconstruction to the same processes of change as before.

Others are of opinion, that after being so

long in a course of preparation for organic life, it was not universally whelmed in ruin, but only a portion of it ; and that the reconstruction was confined to that portion, which Moses, though writing for future generations, represented, conformably to the puerile notions of his predecessors, as the whole earth.

Now if the changes which are alleged to have occupied such vast tracts of time, were designed to improve the condition of the surface and render it fit for the purposes of organic life, why were they rendered nugatory by a miraculous interposition, throwing the whole back into a state of chaos ? Were they designed and controlled by infinite wisdom, and yet failed of their object ? If the geological theory of antiquity is true, the process of wreck and ruin must have taken place, or else there was no reconstruction, no new creation, fitting up, adjustment, or making of anything, and the Mosaic account must be rejected altogether. This the geologists clearly perceive, and some of them neither suppress nor disguise the unavoidable inference. They find in the volumes of stratifi-

cation no evidence that the strata have ever been thrown into a state of chaotic disorder, but quite the contrary. The strata are found just as they should be, just as they were when originally deposited, excepting the changes which have depressed or elevated, and given them an inclined position : and the geologists believe that the same processes by which the ancient deposits were formed are still going on with as much activity as ever, and with the like tendency and object. They need no book claiming to be inspired, to inform them that man and certain animals adapted to his use, were brought into existence at the proper period, or that the period was recent. This was but a matter of course ; and had they lived when the first pages of the petrified volume were completed, or when the first trilobite was inhumed, they could have foretold it, and shown from analogy, that man would live, make war on his own and other species, and die much after the manner of other animals. His creation was but one of a series of creations, which took place from time to time, as occasions arose, and it would be, in their view,

highly presumptuous to conclude that it was the last of the series.

Those whose regard for the Bible will not permit them to go all these lengths, nevertheless hold to the wreck and ruin miraculously superinduced, to give occasion to the remodeling and fitting up which they believe to have taken place on the "six days;" leaving it to others to imagine what purpose worthy of infinite wisdom and goodness had been accomplished during the preceding myriads of ages, and to conceive how the whole could have been thrown into chaotic disorder, and yet be found at present as it was before.

The Scriptures, on the other hand, plainly teach us, that the world as it was created was in a perfect state; not a fluid, igneous mass, but earth and water; a state adapted to the immediate and most exuberant production of plants and animals. At the close of the sixth day, all the works of that and the preceding days are pronounced good. "Thus the heavens and the earth were finished, and all the host of them. And God blessed the sev-

enth day, and sanctified it; because that in it he had rested from all his works which God created and made."

The design of the creation, and its connection with moral purposes and results, elsewhere disclosed in the sacred writings, abundantly imply, that it was originally perfect, and that, instead of its having been afterwards improved in its condition, the changes it has undergone have taken place in consequence of the apostacy and depravity of man. Accordingly the catastrophes recorded in the Bible, are announced as penal inflictions. Man sinned, and the earth was cursed for his sake. The extreme wickedness of his early descendants, gave occasion to the deluge, "to destroy them with the earth." The guilt of Sodom and Gomorrah, brought destruction upon those cities; they were condemned with an overthrow, burned, and made "an example unto those that afterwards should live ungodly."

The Scriptures teach us that the earth was cursed on account of man's apostacy, and that

when the consequences of his revolt shall be overcome, and the curse removed, it will be renovated and restored to its original perfection.

CHAPTER IV.

The following extracts from different works on Geology will sufficiently indicate the views of the authors on the points to which they relate.

“As the materials of stratified rocks are in great degree derived directly or indirectly from those which are unstratified, we commence our inquiry at that most ancient period when there is much evidence to render it probable that the entire materials of the globe were in a fluid state, and that the cause of this fluidity was heat. The form of the earth being that of an oblate spheroid,—is that which a fluid mass would assume from revolution round its axis. The nebular hypothesis offers the most simple and therefore the most probable theory respecting the first con-

dition of the material elements that compose our solar system.”—*Buckland*.

“The nebular hypothesis in its relations to the planetary system may be termed complete ; it comprehends its beginnings, establishes those elements on which its duration depends, and exhibits the causes and mode of its ultimate transition into a novel form ; and thus surveying it from its commencement to its close, we are as if in possession of that primeval Creative Thought which originated our system, and planned and circumscribed its destiny.” “If that nebular hypothesis be true, all the forces developed upon the surface of our planet, and which have given rise to geological transitions, stretching through periods in which the existence of the human race is an invisible speck, will have resulted during a stage of condensation in a secondary nebula, which no instrument from any fixed star could possibly detect.” “Our supposed origin of the planets gave them and their satellites that kind of orbits, and that kind of rotation, which produced their permanence ;

and the inherence of this same nebulous parentage, viz : the existence of an ether, leads gently to their decline.”—*Nichol*, pp. 82, 106, 108.

“The nebular hypothesis, ridiculed as it has been by persons whose ignorance cannot excuse their presumption, is regarded as in a very high degree probable by some of the finest and most Christian minds. If I may venture to utter my own impressions, I must profess it as the most reasonable supposition, and the correlative of the nebular theory, that God originally gave being to the primordial elements of things, the very small number of simple bodies, endowing each with its own wondrous properties.”—*Smith*.

“The evidence of geological phenomena constrains us to the belief, that our earth has existed, has been the seat of life, and has undergone many changes of its surface, through periods of time utterly beyond human power to assign. That evidence is of distinct and independent kinds, *chiefly* derived from the

appearance of stratification and the remains of animal and vegetable life.”—*Smith*.

“The best writers abound in general expressions ; such as ‘immense periods of time—undefined, yet countless ages—a duration to which we dare not assign a boundary—a work infinitely slow—a space of time from the contemplation of which the mind shrinks—a long succession of monuments, each of which may have required a thousand ages for its elaboration—successions of events where the language of nature signifies millions of years.’”—*Mantell, McCulloch, Sedgwick, and others, quoted by Smith*.

“The whole series of strata, from the earliest of them to the present surface of the globe, exhibits a body of evidence in favour of our doctrine [of antiquity.] Every stratum, partially excepting the limestones, consists of a mass of earthy matters which once formed the substance of rocks on elevated land. Those portions of the rocks have been separated from their parent masses, worn down,

comminuted, transported often to great distances by the force of water, deposited, consolidated and hardened.”—*Ibid.*

“Beneath the whole series of stratified rocks that appear on the surface of the globe, there probably exists a foundation of unstratified rocks, bearing an irregular surface, from the detritus of which the materials of stratified rocks have in great measure been derived either directly by the accumulation of the ingredients of disintegrated granite rocks ; or indirectly, by the repeated destruction of different classes of stratified rocks, the materials of which had, by prior operations, been derived from unstratified formations.”—*Buckland.*

“In mountainous countries many facts are presented to the eye which approach to a standard of measurement of the average action of the atmosphere and of running water, in decomposing and washing off the surface of granitic and basaltic rocks. That action is sure and constant ; but it is slow, to such

a degree that not years but centuries are required for its chronicle. Even the abrading of that description of rocks where they form the boldest sea-coast, by the violence of storms added to the ordinary action of water and weather, (an addition of great power,) has not materially altered the outline of such shores in Cornwall, the west and north of Scotland, Norway, and many other countries, since the beginning of our historical knowledge. But the action of a fresh water river infringing upon hard rocks, is much more feeble.”—*Smith*.

“Every step we take in it [geology] forces us to make unlimited drafts on antiquity.”—*Scrope, in Smith*.

“The detritus of the first dry lands, being drifted into the sea, and there spread out into extensive beds of mud, and sand, and gravel, would for ever have remained beneath the surface of the water, had not other forces been subsequently employed to raise them into dry land. These forces appear to have

been the same expansive powers of heat and vapour, which, having caused the elevation of the first raised portions of the fundamental crystalline rocks, continued their energies through all succeeding geological epochs, and still exert them in producing the phenomena of active volcanoes.”—*Buckland*.

“All observers admit that the strata were formed beneath the water, and have subsequently been converted into dry land.”—*Ibid*.

“The first appearance of stratification is in the rock called Gneiss. This is composed of the same materials as granite, on the irregular outline of which it rests. Over the Gneiss, come the beds of Mica, Shist, and Slates, whose thickness, ‘like that of the Gneiss, cannot be ascertained, on account of the intervention of other rocks.’ Their mode of formation is proved by the most striking characters to have been the same as that of the Gneiss. If we should venture to estimate the united thickness of this class, added to the Gneissic, at three or even four miles, we

could not be charged with exaggeration.”—*Smith.*

“The thickness of these strata we know to be enormous. These depths are discovered by geological observations and inferences—that they extend to many miles was also proved. We have every reason to know from what is taking place on our own earth, that the accumulation of materials at the bottom of the ocean, is a work *infinitely slow*. We are sure that such an accumulation as should produce the primary strata, as we now see them, must have occupied a space, from the contemplation of which the mind shrinks.”—*McCulloch, as quoted by Smith.*

“Of the next group, the “siliceous, slatey, and limestone aggregates, to which the name *silurian system* is given,—the united thickness is about a mile and a half. Who then can calculate the periods of their derivation from the older formations, their deposition, their elevations, and distortions; their convulsions, penetrations, and alterations of the

adjoining rocks, by *frequent* outbursts from the fiery liquid below, and other movements, till they were brought to their existing condition. It would seem perfectly impossible for any person, but moderately acquainted with the visible phenomena of volcanic regions, to escape the impression that myriads of ages must have been occupied in the production of these formations, before the creation of man and the adaptation of the earth's surface for his abode. Evidence to the same effect would accumulate upon us to a vast amount, in examining the old red sandstone, a remarkable deposit, several thousand feet in thickness, found in some parts of Great Britain, more abundantly in Ireland, and either in resemblance, or in equivalence, in many foreign regions. Next we come to the mountain limestone, consisting almost entirely of the shells and coralline productions of sea animals, often a thousand and more feet in thickness. This formation is frequently more or less interposed among the beds of coal, composed of compressed vegetable matter, underlaid and overlaid with shales, and

sand stones in every variety, often effecting a thickness of three thousand feet. The new red sandstone, advances us about another thousand feet.

“Other changes implying probably some alteration in the disposition, and consequently the action of the fiery gulf below, marked the next great system, or series of rocks,—the Oolitic. Its general thickness can be little less than half a mile. It is filled with the most convincing proofs of deposition from sea water both shallow and deep, the mingled waters of river mouths, and perhaps even fresh water of rivers and lakes.

“We arrive, in ascending, at the great masses of chalk, and its accompaniments of peculiar clays and sands, to the thickness of a thousand feet more. Though the lines of stratification are not here so visible as in the underlying formations, the evidence of deposition from watery mixture, and of very interesting effects from molecular and chemical attractions is so clear as to be irresistible.

“Our last stage of ascent comprehends the tertiary series; a succession of beds,

clays, sands, and limes, variously intermixed, occupying a thickness of six or eight hundred feet. When we have mounted to the most recent of those later formations, immediately below the soil on which we tread, we find enormous masses of gravel and other transported materials demonstrated by their position to have been rolled along by mighty currents, subsequently to all the lower formations.

“In those stratified rocks which are of a sandy constitution it is common to find pebbles, from the size of coriander seeds to that of birds’ eggs, and much larger. These bear demonstrative evidence of having been derived from more ancient rocks, by fracture and detachment, *long rolling on a hard bottom under water*, dispersed through the loose sand of a deposit, *subsiding to the lower part* if a tolerable free motion were permitted, and then consolidated. Let the old red sand stone be our example. In many places the upper part of this vast formation is of a closer grain, showing that it was produced by the last and finest deposits of clayey and sandy mud, tinged as the whole is, with oxides and

carbonates of iron, usually red but often of other hues. But frequently the lower portions, sometimes dispersed heaps, and sometimes the entire formation, consists of vast masses of conglomerate [pebbles with sand, &c.]

“The earliest slate rocks, like all other strata, must have been originally deposited in a position horizontal or nearly so. By subsequent movements, not one but evidently many, they have been raised to all elevations, and bent to the utmost extent of contortion : as is shown by the lines of stratification.

“The stratification contains in itself the evidence of having required periods, impossible indeed to be determined by any assignment of figures, but to which, judging from all approximating evidence, our cycles of time afford none but a totally defective measure of comparison.”—*Smith*.

“It appears that from the remotest periods there has been ever a coming in of new organic forms, and an extinction of those which pre-existed on the earth ; some species

having endured for a longer, others for a shorter time ; but none having reappeared after once dying out.”—*Lyell*.

“ General and particular results all agree in demonstrating that the physical conditions of the ancient ocean must have been very different in some respects, from what obtain at present ; and that these conditions were subject to great variation during the very long periods which elapsed in the formation of the crust of the earth. In the course of these changes, whole groups of animals perished ; others were created to perish in their turn.”—*Phillips*.

“ The former universality of the ocean [is] now disproved by the discovery of the remains of terrestrial vegetation in strata of every age, even the most ancient.”—*Lyell*.

“ In an early part of our inquiry we traced back the history of the primary rocks, which composed the first solid materials of the globe, to a probable condition of univer-

sal fusion, incompatible with the existence of any forms of organic life, and saw reason to conclude that as the crust of the globe became gradually reduced in temperature, the unstratified crystalline rocks, and stratified rocks produced by their destruction, were disposed and modified, during long periods of time, by physical forces, the same in kind with those which actually subsist, but more intense in their degree of operation ; and that the result has been to adapt our planet to become the receptacle of divers races of vegetable and animals beings, and finally to render it a fit and convenient habitation for mankind."—*Buckland*.

"In the course of our inquiry, we have found abundant proofs, both of the beginning and the end of several successive systems of animal and vegetable life ; each compelling us to refer its origin to the direct agency of creative interference."—*Ibid*.

"If geology should seem to require some little concession from the literal interpreter of

Scripture, it may fairly be held to *afford ample compensation* for this demand, by the large additions it has made *to the evidences of natural religion*, in a department where revelation was not designed to give information."—*Ibid.*

"There are good grounds for supposing that, beyond a certain thickness for the solid crust of the earth, which can hardly be estimated at so much as *thirty* miles, the next contiguous matter is in a state of fusion, at a temperature probably higher than any that man can produce by artificial means ; or any natural heat that can exist on the surface."

"All strata follow antecedent ones in an order which is certain and invariable for every region of the earth. Nowhere, however, is the entire series found. Some member or many are wanting in every assignable locality ; but they are never put in a violated order. The lower strata, manifestly the most early, are generally of the greatest extent in length and breadth, and very much the deepest in thickness. The higher and newer are seve-

rally of less magnitude in every dimension. Yet, in no case, must the idea of size or extent be taken upon a trifling scale. Even with the most recent, the area of one formation is often some hundreds of square miles.”—*Smith*.

“There are thirty, or rather more, well defined *beds, layers, or strata*, of *different* mineral masses, (*different* in mineral composition,) lying upon each other, so as to form the surface of the globe on which we dwell. These combine themselves, by natural characters, into three or four grand groups. Compare them to a set of books, in thirty or forty volumes, piled up on their flat sides. They are placed one over the other, in a *sure* and *known* order of succession; that is, though in every locality some are wanting, the order of position is never violated.”—*Ibid*.

“In the older fossiliferous rocks, animal life appears in as full a development with respect to *size*, as in the existing analogous animals. It does not appear that animal life, at

that period, was limited with respect to number. The lower silurian rocks are crowded, in some localities, with organic bodies ; and their absence over extensive districts is only a condition in the distribution of testacea, &c. which prevails in our seas.”—*Ibid.*

“ In the superficial gravel containing rolled blocks of stone, coming from vast distances, we find bones of the elephant, rhinoceros, &c. of *extinct* species, mingled with bones of mammals of *known* species.”—*Ibid.*

“ The sources from which the matter of these ejected [volcanic] rocks ascend, are deeply seated beneath the granite ; but it is not yet decided whether the immediate causes of an eruption be the access of water to local accumulations of the metalloïd bases of the earths and alkalies ; or whether lava be derived directly from that general mass of incandescent elements, which may probably exist at a depth of about one hundred miles beneath the surface of our planet. The intrusion both of dykes and irregular beds of

unstratified crystalline matter, into rocks of every age and every formation, all proceeding upwards from an unknown depth, and often accumulated into vast masses, overlying the surface of stratified rocks, are phenomena co-extensive with the globe. Each individual movement [of the volcanic forces] has contributed its share towards the final object, of conducting the molten materials of an uninhabitable planet, through long successions of change and of convulsive movements, to a tranquil state of equilibrium ; in which it has become the convenient and delightful habitation of man, and of the multitudes of terrestrial creatures that are his fellow tenants of its actual surface.”—*Buckland*.

“ It is from the more ancient coal deposits that the most extraordinary evidence has been supplied in proof of the former existence of an extremely hot climate in those latitudes which are now the temperate and colder regions of the globe. It appears from the fossils of the carboniferous period, that the flora [contained] tree ferns, or plants allied to

them, from forty to fifty feet in height ; and arborescent lycopodiaceæ, from sixty to seventy feet high. Of the above classes of vegetables, the species are all small at present in cold climates ;--their development even in the hottest parts of the globe, is now inferior to that indicated by the petrified forms of the coal formation. In regard to the geographical extent of the ancient vegetation, it was not confined, says M. Brongniart, to a small space, as to Europe for example ; for the same forms are met with again at great distances. Thus the coal plants of North America are, for the most part, identical with those of Europe, and all belong to the same genera. The uninjured corals and chambered univalves of Melville Island [lat. 75°] and other high latitudes, sufficiently prove that, during the carboniferous period, there was an elevated temperature, even in northern regions bordering on the Arctic circle. The heat and humidity of the air, and the uniformity of climate, appear to have been most remarkable when the oldest strata hitherto discovered were formed. The approximation

to a climate similar to that now enjoyed in these latitudes, does not commence till the era of the formations termed *tertiary*; and while the different tertiary rocks were deposited in succession, the temperature seems to have been still farther lowered, *and to have continued to diminish gradually, even after the appearance upon the earth of a great portion of the existing species.*"—Lyell.

"The upper bed of rock salt in Cheshire is twenty-six yards thick, and is separated from the lower bed of salt by a stratum of argillaceous stone ten' yards thick. The lower salt has been penetrated forty yards. In another part of Cheshire three beds of rock salt have been found. The uppermost is four feet thick, the second twelve, and the lower has been penetrated twenty-five yards, but is not cut through. The rock salt at Cardona, in Spain, is 663 feet in height. Hungary and Poland afford the most numerous and extensive repositories of rock salt in Europe. The beds are inclined at an angle of 40°. There is an extensive formation

stretching on each side of the Carpathian mountains for 600 miles. In the lofty deserts of Caramania in Asia,—in Great Tartary, Thibet, and Indostan, this mineral is also found. In the elevated mountains of Peru, it is said to occur at the height of 9000 feet above the level of the sea. In the desert of Lybia there is an extensive bed; and it is found in South Africa, New South Wales, and in various islands.”—*Bakewell*.

“Taken as an illustration of the structure of the crust of our globe, the successive coats of an onion, if they were of different colours, might not unaptly represent the different strata that cover certain districts. The different strata which occur under each other, are not arranged in the order of their density or specific gravity. Coal strata, for instance, are often covered with strata of iron stone, the specific gravity of which is more than twice that of coal. *Primitive rocks* were so called because no fossil remains of animals or vegetables, nor any fragments of other rocks, were found imbedded in them. Those

rocks generally occur in immense masses or beds ; they form the lowest part of the earth's surface with which we are acquainted, and constitute the foundation on which rocks of the other classes are laid. The rocks which immediately cover them contain, almost exclusively, the organic remains of the lowest class of animals. The lower series of *secondary rocks* are almost all distinctly stratified. Every regular stratum in which organic remains are disseminated, was once the uppermost rock, however deep it may be below the present surface. If it had been predicted a century ago, that a volume would be discovered, containing the natural history of the earliest inhabitants of the globe, which flourished and perished before the creation of man, what curiosity would have been excited to see this wonderful volume ; how anxiously would philosophers have waited for the discovery ! But this volume is now discovered ; it is the volume of nature, rich with the spoils of primeval ages, unfolded to the view of the attentive observer, in the strata that compose the crust of the globe. Some of the more

delicately constructed animals, and the fish whose bodies are found entire, imbedded in stone, appear to have been instantaneously destroyed and enveloped in mineral matter, before the putrefactive process could commence. Stratified rocks are composed of layers of stone, laid over each other, and divided by parallel seams like the leaves of a closed book. In these seams or partings, which divide the strata, there are frequently thin laminæ of soft earthy matter ; but sometimes the surfaces of the upper and lower stratum are so closely joined that it requires a considerable force to separate them. The highest known point at which granite has been observed, in any part of the world, is Mont Blanc--15,680 feet above the level of the sea. In the northern or Swiss Alps, granite is seen only near their bases ; the summits are composed of immense beds of stratified rocks. In the extensive range of the Andes, granite has not been found in a greater elevation than 11,500 feet. The summits of the Himmaleh mountains are believed to be composed of secondary strata. Though

granite may be regarded as the lowest known rock formation, yet it is certain, that in many countries, the seat of volcanic fire is placed below granite. All rocks under the coal formation, belong either to the transition or primary class ; and all the strata above the coal formation belong either to the upper, secondary, or the tertiary class. The different strata under a bed of coal are frequently similar to the strata over it ; and the same series is again repeated under the lower beds of coal, and sometimes with a perfect similarity both in the succession and thickness of each. The thickness of the coal strata in the same coal-field often varies from a few inches to several yards ; but each stratum generally preserves the same thickness throughout its whole extent. A dyke is a wall of mineral matter cutting through the strata in a position nearly vertical. The great coal formation appears to be confined to the lower secondary strata, generally resting on transition limestone. A remarkable coal formation occurs in Switzerland at the depth of 280 feet from the surface ; over the

coal there is a stratum of bituminous limestone, containing fluviatile shells, and bones and teeth of the large mammalia, particularly the teeth of a species of mastodon. Were it not for the organic remains in different rocks, we could not be certain that all rock formations were not contemporaneous. With respect to the identity of age, or what is pedantically named the synchronism of rock formations in distant countries, there can be little hesitation in admitting it, where the association with other rock formations is similar in both countries. The disintegration of rocks and mountains is constantly taking place by the incessant operation of the elements."—*Bakewell*.

The following Geological doctrines are derived from the preceding extracts, and others elsewhere inserted, and from other passages in the writings of the same authors.

1. That the globe was at first in a state of igneous fluidity; and that the process by which its surface became cooled resulted in

the formation of a crust of granite or crystalline rocks.

2. That the surfaces of these rocks were, by the combined action of air and water, worn down and floated from higher to lower levels in running water, and deposited at the bottom of seas, lakes, &c. in layers, beds, or strata.

3. That these strata, though differing widely from each other in their composition, are respectively formed of homogeneous materials, and in an order of succession which is uniform; that the lower members of the series are much thicker, and occupy areas of larger extent, than those above them, and especially those nearest the present surface; and that they were deposited in a position horizontal or nearly so.

4. That the entire series of stratified formations was effected by the slow and gradual operations of those second causes, mechanical and chemical, which are at present producing analogous results; and that the process occupied inconceivable periods of duration.

5. That when by this process, and by the elevation of the deposits formed under seas, or otherwise, portions of dry land appeared, certain plants and animals were created to occupy them; and subsequently, from time to time, new creations of organic beings, terrestrial and marine, took place. That the remains of many of the plants and animals, which were created and flourished successively at different periods, were buried in the slow process by which the successive stratifications were formed, and are now discovered in a fossil state; and that the strata were subsequently upheaved by forces from below, to various degrees of inclination and elevation.

6. That the object of the stratifications, and other changes referred to, was to improve the condition of the earth, and fit it to be the abode of man.

7. That after the complement of geological changes had been effected, and the stratified series ended, the whole was thrown into a state of chaos or confusion, darkness and ruin; and was reconstructed and arranged so

as to be fit for the reception of man, conformably to the account of the "six days" operations recorded by Moses. [Held by those who desire to show that their theory is consistent with the Mosaic account.]

8. That in the progress of those changes, or at some period, the climate both of the northern and southern hemisphere, and especially of the polar regions, was changed from a state of tropical heat and productiveness, to a state of extreme coldness and sterility.

9. That since the date of the creation, as recorded by Moses, the same mechanical and chemical causes which operated the preceding geological changes, have been at work, but have produced but slight effects, at least within the last 3000 years.

10. That the result of the whole is, that the state of the earth is, and has been, since the date of the Mosaic creation, peculiarly fitted to be the residence, and to subserve the comfort and happiness of man.

CHAPTER V.

The theory involved in the foregoing doctrines and opinions of Geologists, is liable to numerous objections other than those derived from the sacred writings.

1. None of the processes which belong to this theory appear to provide, or in any manner to account for the production of, the waters of the ocean. These waters have an average depth of several miles. They cover about two-thirds of the superficial area of the globe. Their contents, in cubic feet, as compared with those of the entire mass of stratified rocks, may perhaps be as three or four to one. In treating of the "crust," or superficial matter of the globe, therefore, they would seem to be entitled to very particular attention; and in the Scripture account of the creation, they are clearly and amply provided for. The geological writers, however, speak of them only as if they existed as a matter of course, and give no account or explanation whatever of their origin, formation, or character, in any respect.

Now let the reader imagine that the globe was originally in a state of igneous fluidity, and that the outer surface cooled down and formed a shell or crust of granite or crystalline rock fifty or a hundred miles in thickness; and then conceive, if he can, whence this indurated surface was furnished with such a mass of salt water, or with a single drop of it. It could not, while the crust was cooling and hardening, have passed off in vapour into the atmosphere, for that would not hold enough to be taken into the account in estimating its quantity, nor any at all in a saline state; and if any process of exhalation from the heated mass below took place, and was repeated ever so many times while the surface was cooling, and did not evaporate as fast as it fell, how, when precipitated in rain, did it become salt?

There can be little hazard in saying that, upon this geological theory, it is impossible to give any account of the origin or manner of producing this copious element. The decomposition of granite would yield neither water nor salt; and if water did not exist,

both in the seas and in rivers, at the commencement of the sedimentary deposits, there could have been no detritus washed down and deposited. In a word, if it was not created at the same time with the solid parts of the earth, separated from those parts and gathered into seas, according to the Scripture representation, we must be content to remain in total ignorance of its origin.

2. The theory is equally deficient in respect to the origin or production of the atmosphere; the existence of which is in like manner taken for granted, without so much as a word of explanation. The eyes of the geologists would seem to have been constantly turned downwards, and so intently fixed on the phenomena of imbedded rocks and bones, as to take no further notice of the two principal instruments of those phenomena than to assume their presence and agency to the utmost extent required by their hypotheses. If their theory is true, some explanation is at least desirable. If the material of the globe was originally thrown off from some nebular mass, and commenced its revolutions in a state of

igneous fluidity, a state of the most intense heat, it occurs to ask, whether it brought its atmosphere with it? Whether such an atmosphere could endure and co-exist with such an incandescent mass in the midst of it? Or whether it was formed gradually by those second causes which are still at work, and by which all other changes are alleged to have been produced? And if so formed, is its volume still increasing? Was it, as gradually formed, endued with all its present properties, or has it been perfected by slow degrees by the same causes, and in connection with the changes which are alleged to have improved the constitution and condition of the earth?

3. It being thus apparent that the two elements by which, in the course of all but infinite periods of duration, the original crystalline rocks are supposed to have been decomposed, and their detritus to have been transported and deposited in the strata which now exist, are, as to their origin or mode of production, wholly overlooked by the Geologists, being neither accounted for, nor any room left

to conceive how they came into being ; it becomes necessary in proceeding with their theory to do as they do, take it for granted that the ocean and the atmosphere were present to perform the functions assigned to them.

The next most obvious inquiry then, relates to the origin or production of the quantity and variety of materials which compose the stratified portion of the earth's crust. The theory teaches that these materials were derived from the granite or crystalline rock which constituted the solid surface prior to the commencement of the sedimentary or stratified formations. That rock we are told was, by exposure to the atmosphere and to the action of water, gradually, though the process was inconceivably slow, worn down, transported over the beds of the ancient seas, and there spread out and deposited in layers of mud, sand, and gravel.

Now it is apparent that if such a process took place, it would naturally prevail simultaneously all over the globe ; the rocks which rose above the surface of the seas being every where alike exposed to the atmosphere, and

the ocean beds being every where alike capable of receiving the detritus. The stratum first deposited would therefore be co-extensive with the depressed portions of the original granite surface, leaving the more elevated portions, those which extended above the surface level of the sea, and the mountain ridges, still exposed. After the deposit of the first stratum, therefore, or the formation of the lowest portion of it to the depth of a few inches, the only resource left for the supply of materials for the remainder of that stratum and for all the formations above it, was those granitic surfaces which still appeared above the sea level. Now the entire series of sedimentary formations is estimated by some to be about five miles, and by others more, up to ten miles in thickness. They were extended, especially the lower beds, comprising three to four-fifths of the depth of the whole mass, over a very large proportion, perhaps three-fourths of the area of the present continents and islands. To what extent or depth they prevail over the area occupied by the present seas, must be matter of conjecture. But

enough is known to render it safe to say, that the geologists may exhaust the vocabulary of their own and other languages in representing to us how the primitive rocks were worn down and transported as it were atom by atom, and spread out over areas thousands of miles square in continuous and homogeneous beds, till masses miles in thickness were accumulated : but when they have explained the process, and confirmed it by their construction of geological facts, and assigned to it ages and periods of duration which words cannot even faintly indicate, the supply of materials for these vast formations, unless the lowest part of the first stratum be excepted, will remain as entirely unaccounted for, on their theory, as are the atmosphere and the waters of the ocean. For no further supply of matter could be derived from the surfaces covered by the earliest deposit, and so far as there is any evidence from geology or from any other source, those primitive rocks which were originally elevated above the sea level, and exposed to the action of air and water, and which remain so to the present day, co-

vered or flanked by the earliest and lowest of the sedimentary deposits, have parted only with portions of their materials too insignificant to be mentioned in an account of the stratified masses. And as to the breaking up by inundations, river currents or otherwise, of strata or portions of strata previously deposited, sweeping over extensive tracts technically called valleys of denudation, or excavating channels and gorges, and drifting their materials into the ocean, it is apparent that such operations could add nothing to the general mass of sedimentary matter, any more than rain adds to the general mass of water. The resource for materials which this theory commends to us, would seem therefore to exist only in imagination. All we can say is, that the materials were necessary to the theory, and therefore the supply, as in the case of air and water, was taken for granted.

4. Passing by, for the present, several obvious considerations respecting the diverse character of the matter which enters into the composition of different strata, the homogeneity generally of the materials in each

of the formations, respectively, the distribution of fossil relics, &c. in order to bring into view that part of the geological theory which relates to the antiquity of the earth, or the lapse of time required by the inconceivably slow progress of the sedimentary deposits, it occurs to observe that the present position and condition of the stratified masses strongly indicate that their formation could not have occupied any such prolonged periods ; or any more than a very brief period. This is rendered highly probable by the fact that since their formation, their position has been generally, perhaps universally altered from their original level to various degrees of elevation and inclination. It is allowed that they were formed in a horizontal position, by subsidence in water. The supposition that their formation occupied millions of millions of years, requires it to be supposed that the forces by which their position was afterwards changed, remained dormant during those countless periods : which, at least on the geological theory, is to the last degree improbable ; for that theory ascribes both the strata and their

merging the hills—an onward, irresistible, charging to the ocean. Cutting the surface were crevasses, or gutters, some of great depth, with off the melted snow.

It was midnight when we made our approach. The sun was several degrees beneath the horizon, and a faint twilight. Stars of the second magnitude were visible in the northern heavens. When we were half a mile of the icy wall, a brilliant meteor shone, and, by its reflection upon the glassy surface, heightened the effect of the scene; while the distant thunder or the booming of artillery, borne from the heart of the frozen sea.

Upon close inspection we found the face of the ice to ascend at an angle of from thirty to thirty-five degrees. At its base lay a high snow-bank, up which we climbed with some effort; but beyond this the ice was so smooth that no further efforts. The mountains, which stood like giant fingers on either side, were overlapped and partially submerged by the glacier. From the face of this a multitude of streams ran down the gutters already mentioned, or gullies, beneath the ice, and formed, on the level lands, a wet marsh, not twenty yards from the icy wall. In this strange contrast, beds of green moss; and in the dwarf willows were twining their tiny arms around the feeble flower-growths; and there, clustered and crouched among the grass, and sheltered by the snow, feeding on the bed of lichens, I found a white

head of the Indus, glaciers of great size and at the head of the Basha River "is over this its lower part, for a distance of twenty or being about a mile and a half in width some distance at least—it is still wider. of this glacier seems to be its very small in large portion of its course it has an angle of one and a half or two degrees.

"At the head of the Braldu Valley, and of the Shigar, is one of the largest known Baltoro. This is said by the officers of thirty-five miles in length, 'measured along its termination up to peak K⁶.' The Biaf of which is about ten miles west of the B over forty miles long." *

At the heads of the Sutlej and the Ganga developments are witnessed, as well as at v throughout the whole length of the range.

Passing to South America, we find, according to reports, that until reaching the southern b glaciers are infrequent and relatively small.

Whymper, no glaciers in Equador descend feet above the sea, and the glaciers in that on the eastern side. Only on Cotopaxi, Chi

* Whitney's "Climatic Changes," pp. 2

mystern ; which was no sooner done, than the ha
so much, with snow and sleet, that we did not see
ice, which we were steering directly for, till we w
a mile from it. I judged it to be about fifty fe
half a mile in circuit. It was flat at the top, and
in a perpendicular direction, against which the s
ceedingly high. . . .

At one o'clock we steered for an island of ice,
there were any loose ice round it, to take some or
convert it into fresh water. At four we brought
der the lee of the island ; where we did not fi
wanted, but saw upon it eighty-six penguins. T
ice was about half a mile in circuit and one hundr
and upward, for we lay for some minutes with e
calmed under it. . . .

At nine in the morning we bore down to an
which we reached by noon. It was full half a mi
and two hundred feet high at least, though very li
about it. But while we were considering wheth
should hoist out our boats to take some up, a gr
broke from the island. Upon this we hoisted ou
and went to work to get some on board. The p
both great and small, which broke from the island
drifted fast to the westward ; that is, they left t
that direction, and were, in a few hours, spread
space of sea. . . .

Finding here a good quantity of loose ice, I
boats out, and sent them to take some on board.



FIG. 34.—Iceberg.

of the sea, turned nearly bottom up. Its circumstance, was neither increased nor diminished. . . .

In the evening we had three islands of ice, of them large ; especially one, which was larger than yet seen. The side opposed to us seemed to be impenetrable ; if so, it could not be less than three inches thick. We passed it in the night, a continual cracking was heard, no doubt, by pieces breaking from it. In the morning of the 6th, the sea, for some distance, was covered with large and small pieces ; and they did not appear so large as it had done the evening before. It could not be less than one hundred feet high. By the impetuous force and height of the waves, broken against it, by meeting with such a succession, that they rose considerably higher.*

For a series of years the Board of Trade collected statistics from the navigators of the ships who reported icebergs encountered in their voyage.

* " Voyage round the World," pp. 20, 29, 48-

number of local glaciers which became continuous only during the middle of the period. The most interesting evidences of the independence of the different portions of the great North American ice is to be found in the driftless region of southern Wisconsin. Here is an area of several hundred miles extent, occupying more or less of the adjoining Illinois, Iowa, and Minnesota, which remained free from the great continental expanse of ice. The ice advanced upon both sides, and then closed together and moved onward, a distance of about 300 miles in the vicinity of St. Louis.

When, a few years ago, attention was first called to the moraine of Mr. Clarence King,* Mr. Warren Upham,† George H. Cook‡ to the terminal moraines of the Connecticut River in England and northern New Jersey, by President Schuchert§ to the character and connection of the moraine in Wisconsin, and by Dr. George M.

* See my paper in the "Proceedings of the Boston Society of Natural History," vol. xix, pp. 60-63.

† "New Hampshire Geological Report," vol. iii, pp. 300-301.

‡ "Report upon the Geology of New Jersey for 1878."

* "On the Extent and Significance of the Wisconsin Moraine."

§ "On the Superficial Geology of the Central Region of New Jersey," from the "Quarterly Journal of the Geological Society," vol. xlii, is a summary of a portion of the author's "Report on the Geology of the Forty-ninth Parallel," 1875.

topography, we will pause to consider more of the main characteristics of it as so far traced.

That these hills constitute a true moraine is shown by the fact that they are composed of loose material both from the nature of the case and from the fact that what is actually deposited wherever the ice rests for any great length of time. A considerable part of them consists of material which has been brought from various localities to the north, and which shows no stratification. Some of the bowlders are angular, as if having been carried upon the surface of the ice. Others are partially rounded and smooth in manner as to show that they have been forced through the mass of sand and gravel which everywhere accompanied the moving field of ice. Sections, however, from these hills show a limited amount of stratification, which is not at all surprising, when we consider the manner in which the ice itself to a certain extent smoothed the surface and furnishes channels for the running water which melting provides, and so would itself afford the opportunity necessary to a partial stratification of its own material.

The terminal moraine where best developed is said to consist of innumerable ridges, kettles, and holes. The kettle-holes are of all sizes, and are found in every imaginable position with reference to the moraine; some of them, low down toward

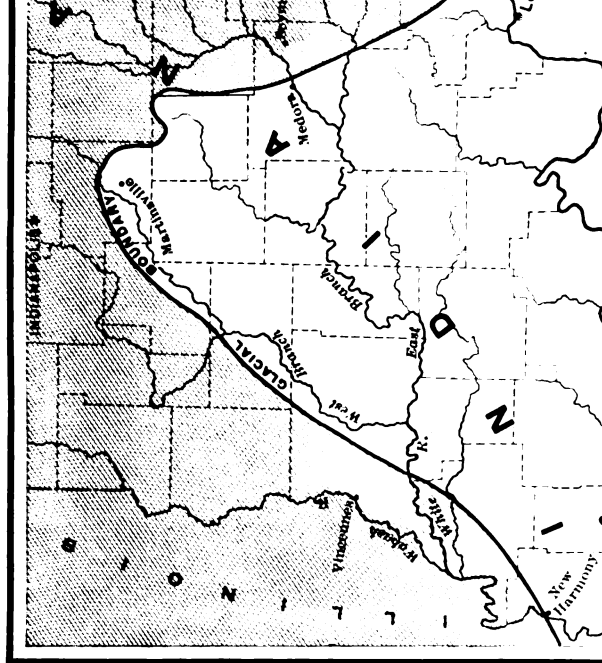
subsidence of the region for which there does be other facts to warrant. My present impression failure to follow the extreme limit of glacial action Pennsylvania has led to a serious error on this death of Professor Lewis prevents our availing his abundant stores of information gathered on visits. But, notwithstanding the fact that he visits of the places south of our line where glacial marks reported, and demonstrated that they were not of glacial action, but to other causes, he makes the following remarks at the close of his report :

In reviewing all the facts regarding the fringe of the foregoing pages, it will be noticed . . . that throughout is about that of the moraine back of it is sometimes somewhat higher.

No striæ have as yet been found in the narrow zone covered by the fringe. The hill-tops bearing the bow of the fringe are in all respects similar to those south of it all drift, and bear no evidence of glacial erosion.

* "American Journal of Science," vol. cxxxv, 1888, p. 376 and the "Seventh Annual Report of the United States Geological Survey for 1886," pp. 537-646, where Mr. McGee has treated of the head of Chesapeake Bay with great fullness. From this work it appears that the Columbia formation at that point does not rise much above the foot level; that its mean thickness does not exceed twenty feet; that the material is all from the Susquehanna Valley, and that large quantities of it are more frequently there than in the formation on the streams farther west.

† "American Journal of Science," vol. cxxviii, 1884, p. 276



Cairo, a little below latitude 38° . From Williams it starts westward upon its final course to the north the Mississippi River, near Grand Tower, in Jackson. From this point to the vicinity of St. Louis the river runs nearly southeast, so that the glacial bound-

ous streams originating in them. Dr. Daw-
Laurentian and eastern limestone boulders
to within twenty-five miles of the base of t
ains, and up to a height of 4,200 feet abo
tance of these traveled blocks from the n
Laurentian region is about 700 miles. Bey
the west, eastern and northern rocks are
elevation of this marginal drift is about 2,0
present height of the Laurentian plateau fro

“To the westward, in the valleys of
D'Oreille, and Osoyoos Lakes, and of B
massive deposits of drift, partly of north
local mountainous derivation. The Pen
Puget Sound deposits appear unquestiona
of the drift of British Columbia, which, i
a continuous mantle, at least passes beyon
simple local mountain drift.” †

In the Rocky Mountain region and to t
were formerly extensive glaciers in Mo
Colorado, Utah, Nevada, and California, w
almost entirely absent. But the glaciation
never general. According to Whitney, th
of ancient glaciers in western Nevada, th
mountains rise to a height of 10,000 feet.

* See the “Quarterly Journal of the Geological Socie

† See Chamberlin, as above.

ment. And here is the point where geology and the Bible are at issue. It is because the geologist assumes to account for the phenomena of the earth by ordinary second causes, to the exclusion of preternatural interpositions, and to treat the subject as though it were wholly independent of moral causes, wholly disconnected from man, and from moral government, that his speculations unavoidably conflict with the Bible, and carry him into the field of skepticism; where, if he does not openly reject the whole of the sacred records, he rejects, or puts such construction on portions of them, as virtually to discredit and subvert the rest.

The suggestions and arguments of Dr. Smith in opposition to the universality of the Deluge, and to the supposition of its having produced any considerable effects, are only such as might be expected from a writer under the double spell of a preconceived and favourite notion of a local and temporary sub

innumerable other questions, connected more or less directly with the phenomena and physical condition of the earth, science is necessarily mute.

Let it be considered that if there was such a moral reason for the changes in the earth, it is no more incumbent on those, who believe that reason to be indicated in the Scriptures, to account for the mode in which the changes were effected, or to specify the instrumentalities employed, than it is to account for the creation, the fall of man, the resurrection, or any other extraordinary event or procedure in the Divine administration. We have an account of the Deluge and of the reason for that visitation, which will at least allow of the supposition of the changes in question having been produced by its instrumentality and in connection with it. It furnished the medium, water, which all allow to have been employed in those changes. If any of the phenomena attending it were supernatural, the shortness of the time of its duration, considered in relation to the magnitude of the results, can no more reasonably be urged as an

objection, than the portion of time occupied in the creation can be urged as insufficient for the accomplishment of that work. It is the only event recorded in Scripture to which the changes can be assigned ; and if it does not indicate the means and the occasion, we are without any historical notice of either. Here it were the part of wisdom to pause. If to the mind of a geologist objections occur founded on the phenomena which he observes ; if he cannot reconcile those phenomena with the supposition that the changes took place in connection with the Deluge, whether on account of their character or extent, let him consider the intrinsic difficulties of his own theory, and the still greater difficulties which attend its bearing on Divine Revelation.

CONCLUSION.

The Holy Scriptures enable us to understand that it was the design of the works of creation and providence, to manifest the Di-

vine perfections to intelligent creatures, in connection with their free agency and the eternal purposes and moral government of Jehovah. It is sufficiently indicated that such a manifestation to creatures of whatever degree of intellectual capacity, and in whatever condition or mode of existence, required the being and conditions of the material creation, and the correlative exhibition of outward and visible agencies, instrumentalities, and results.

This manifestation was made, we are informed, by the eternal Son of God, and with especial reference to his mediatorial work; in the execution of which he became incarnate, and appeared visibly on earth, "God manifest in the flesh, seen of angels." In this state he signalized his Omniscience and other Divine perfections, by acts which showed his supreme lordship and power over all created natures. Hence he is represented as the image or visible manifestation of the invisible God. 'No man hath seen God at any time—the Son, he hath declared Him.' For by Him were all things created that are in

heaven and that are in earth, visible and invisible—all things were created by Him and for Him. And He is before all things, and by Him all things consist.' He is declared to be the 'Head over all things with relation to the Church—the revealer of the mystery which from the beginning had been hid in God, who created all things by Him to the intent that unto the principalities and powers in heavenly places, the manifold wisdom of God might be known by means of the Church, according to the eternal purpose which he purposed in Christ Jesus our Lord.' 'He is gone into heaven—angels and authorities and powers being made subject to Him.' And as a result of his wondrous interposition, it is declared, 'That at the name of Jesus every knee shall bow, of things in heaven and in earth, and that every tongue shall confess that he is Lord to the glory of God the Father.'

In accordance with this declared purpose of manifestation, the actual creation is announced in numerous passages. 'The world was made by Him.' 'Thou, Lord, in the be-

ginning hast laid the foundation of the earth; and the heavens are the work of thy hands; they shall perish, but Thou remainest; and they shall all wax old as doth a garment, and as a vesture shalt Thou fold them up and they shall be changed.' 'For this they,' the scoffers, 'are willingly ignorant of, that by the word of God the heavens were of old, and the earth, standing out of the water and in the water; whereby the world that then was, being overflowed with water, perished, but the heavens and the earth which are now, by the same word are kept in store, reserved unto fire against the day of judgment and perdition of ungodly men!' 'Thou art worthy—for Thou hast created all things, and for thy pleasure they are and were created.'

The connection and similarity of phrases in the passages in which the creation is frequently referred to, is worthy of notice.

'Thus saith God the Lord, he that created the heavens; He that spread forth the earth.' 'I have made the earth and created man upon it—I have stretched out the heavens.' 'Thus saith the Lord that created the heavens, God

himself that formed the earth, and made it; He hath established it; He created it not in vain; He formed it to be inhabited.' 'Who created heaven and the things that therein are, and the earth and the things that therein are, and the sea and the things which are therein.' 'For, in those days shall be affliction, such as was not from the *beginning* of the creation which God created, unto this time.' 'From the *beginning* of the creation God made them male and female.' 'In the *beginning* God created the heavens and the earth.' 'In six days the Lord made heaven and earth, the sea, and all that in them is.' The Lord, which made heaven and earth, the sea, and all that therein is.' 'He hath made the earth by his power, He hath established the world by his wisdom, and hath stretched out the heavens.' 'Thou art Lord alone; Thou hast made heaven, the heaven of heavens, with all their host, the earth and all things that are therein, the sea and all that is therein.' 'My help cometh from the Lord which made heaven and earth.' 'The Lord that made heaven and earth, bless thee.' 'The living God, which made hea-

ven and earth, the sea, and all things that are therein.' 'Worship Him that made heaven and earth, and the sea, and the fountains of waters.' 'Thou hast made heaven and earth.' 'Thou hast made the heaven and the earth by thy great power.'

Again, the figurative language employed in numerous instances, indicates the existence of similar ideas and associations in the minds of the different writers respecting the creation of the earth and the changes it has undergone. The prophet Jeremiah thus depicts the desolations and miseries which were to be visited upon the Jews for their wickedness. 'I beheld the earth, and lo, it was without form and void; and the heavens, and they had no light. I beheld the mountains, and lo, they trembled, and all the hills moved lightly. I beheld, and lo, there was no man, and all the birds of the heavens were fled. I beheld; and lo, the fruitful place was a wilderness, and all the cities thereof were broken down, at the presence of the Lord, and by his fierce anger.' So Isaiah: 'Thou shalt be visited of the Lord of Hosts, with

thunder and with earthquake, and great noise, with storm and tempest, and the flame of devouring fire.' 'For this is as the waters of Noah unto me ; for, as I have sworn that the waters of Noah should no more go over the earth, so,' &c. 'For the mountains shall depart, and the hills be removed, but my kindness shall not depart from thee.' And David : 'The channels of the sea appeared, the foundations of the world were discovered at the rebuking of the Lord.' 'The earth shook and trembled, the foundations of heaven moved and shook.' 'All the foundations of the earth are out of course.'

Isaiah : 'He who fleeth from the noise of the fear shall fall into the pit ; for the windows from on high are open, and the foundations of the earth do shake. The earth is utterly broken down, the earth is clean dissolved, the earth is moved exceedingly. The earth shall reel to and fro like a drunkard, and shall be removed like a cottage ; and the transgression thereof shall be heavy upon it.' Micah : 'Behold, the Lord will come down, and tread upon the high places of the earth, and

the mountains shall be molten under him, and the valleys shall be cleft, as wax before the fire, and as the waters that are poured down a steep place.' ' Arise, contend thou before the mountains, and let the hills hear thy voice. Hear ye, O mountains, the Lord's controversy, and ye strong foundations of the earth.'

These and numerous other passages strongly imply that one or more extraordinary catastrophes or violent convulsions, by which great changes had been effected in the state of the earth, were familiar to the minds of the writers. And on a careful examination it will appear, that the statements and references throughout the sacred volume, whether literal or figurative, concerning the creation, the objects which it comprehended, the purpose of it, its era, the changes which have taken place, and those which are yet in prospect, are all harmonious and concurrent with the import of the Mosaic record as commonly understood.

UNIVERSITY OF MICHIGAN



3 9015 01314 0366

**DO NOT REMOVE
OR
MUTILATE CARD**

